



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/823,323

04/13/2004

Brent J. Bos

DON01 P-1149

4501

28101

7590

08/19/2008

VAN DYKE, GARDNER, LINN & BURKHART, LLP
SUITE 207
2851 CHARLEVOIX DRIVE, S.E.
GRAND RAPIDS, MI 49546

EXAMINER

PYO, KEVIN K

ART UNIT

PAPER NUMBER

2878

MAIL DATE

DELIVERY MODE

08/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/823,323	Applicant(s) BOS ET AL.	
	Examiner Kevin Pyo	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 103-124, 126-128 and 130-148 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 103-124, 126-128 and 130-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 103-105, 107-120, 126-128, and 133-148 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027).

In regard to claim 127, Bechtel discloses (fig. 1) an interior rearview mirror system suitable for use in a vehicle; the interior rearview mirror system includes an interior rearview mirror assembly having an electrochromic reflective element (M-I, M-O) (column 8, lines 15-30); a sensor (DS) positioned in the interior of the vehicle and with a field of view through a window of the vehicle to the exterior of the vehicle, the sensor generating outputs indicative of the sensed light (column 8, lines 54-60); a control responsive to the outputs of the sensor and being operable to control a headlamp of the vehicle responsive to the outputs (column 15, lines 27-41); and wherein the control at least one of (a) accesses a common component of the electronic circuitry operable to control the electrochromic element, and (b) shares a common component of the electronic circuitry operable to control the electrochromic element (column 8, lines 45-53). Bechtel remains silent regarding the control operable to control windshield wipers or a defogging system. However, Noack discloses (fig. 1) an interior rearview mirror system with a controller to control both headlamps and windshield wipers (column 2, lines 17-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

Art Unit: 2878

use the control system to incorporate the sensor to also control windshield wipers in order to increase functionality and automation of the sensor and to produce a more cost effective product. Bechtel in view of Noack discloses using two sensors to detect light to control both headlamps and windshield wipers that are located in the interior cabin of the vehicle at or near the interior rearview mirror assembly. However, Bechtel in view of Noack remain silent regarding the sensor detecting images. However, Stam discloses (fig. 6) an interior rearview mirror system that uses an imaging array (32), wherein the imaging array comprising a plurality of light sensing photosensor pixels (fig.6) and an image processor to perform detection (column 5, line 45 – column 6, line 21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use imaging arrays to detect the light and moisture in order to provide greater accuracy in detecting and controlling the headlamps and windshield wipers. Bechtel in view of Noack fails to disclose an illumination device for illuminating at least a portion of the field of view of the imaging sensor, wherein the imaging sensor is operable to sense a level of ambient light present at the window, the illumination device being activated in response to the imaging sensor sensing low light conditions. However, Stam further discloses (fig. 2) an interior rearview mirror system with an illumination device (66) for illuminating at least a portion of the field of view of the imaging sensor, wherein the imaging sensor is operable to sense a level of ambient light present at the window, the illumination device being activated in response to the imaging sensor sensing low light conditions (column 9, lines 55-63). Furthermore the combination of common elements according to known methods is obvious when it does no more than yield predictable results. *See KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1395 (U.S. 2007). It would have been obvious to one of ordinary skill in the art at the time the

Art Unit: 2878

invention was made to incorporate an illumination device which is activated by the imaging sensor as taught by Stam in order to maintain accurate detection throughout all conditions. Bechtel in view of Noack further fails to disclose that the image processor applies a digital filtering process to account for irregularities on the window of the vehicle. However, Stam further discloses that the image processor performs a digital filtering process to account for irregularities on the window of the vehicle, wherein the digital filtering process smoothes the image data by adjusting values associated with individual pixels based on values associated with respective neighboring pixels at or adjacent or near the individual pixels (column 8, line 44 – column 9, line 39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a digital filtering process in Bechtel in view of Noack as taught by Stam, in order to reduce unwanted noise resulting from defects.

In regard to claim 103, Bechtel in view of Noack and Stam disclose in Stam that the imaging sensor includes a two-dimensional pixilated array of light sensing photosensor elements, the array of sensing elements being formed on a semiconductor substrate (column 9, lines 55-63).

In regard to claim 104, Bechtel discloses that the imaging sensor is positioned in the interior of the vehicle at or near the interior rearview mirror assembly and has a field of view forward and through a windshield of the vehicle (column 8, lines 54-60).

In regard to claim 105, Bechtel in view of Noack and Stam discloses that the imaging sensor includes first and second imaging arrays, the control being operable to control at least one of a windshield wiper of the vehicle and a defogging system of the vehicle in response to an output from the first imaging array (Noack, fig. 1, 43), and the control being operable to control

Art Unit: 2878

a headlamp of the vehicle in response to an output signal from the second imaging array (Bechtel, fig. 1, DS).

In regard to claim 107, Bechtel discloses that the first imaging sensor is positioned in the interior of the interior of the vehicle at or near the interior rearview mirror assembly and has a field of view forward and through a windshield of the vehicle (column 8, lines 54-60).

In regard to claim 108, Bechtel discloses that at least a portion of the electronic circuitry is included on a printed circuit board (column 6, lines 60-63).

In regard to claims 109-114 and 137-139, Bechtel discloses (fig. 5e) that the electronic circuitry includes a display element that includes a vehicle status display, wherein the display element provides at least two display functions and may be selectively operable to provide one of the two display functions, and the display element may be selectively switched between the at least two display functions in response to a vehicle status change (column 13, line 48 – column 14, line 29).

In regard to claims 115 and 128, Bechtel discloses that control is operable to control a headlamp of the vehicle in response to a level of light present at the windshield (column 8, lines 54-60).

In regard to claims 116, 118, 135, and 140, Bechtel in view of Noack and Stam discloses in Noack, that the control is operable to process the image data to detect water droplets at the exterior surface of the window and fog particles at the interior surface of the window and operable to control a window wiper of the vehicle in response to the detection of water droplets at the exterior surface of the window (abstract).

In regard to claims 117 and 136, Bechtel in view of Noack discloses that the control is operable to control a window wiper of the vehicle in response to a detection of the presence of water droplets at the exterior or the surface, but fails to disclose the control being operable to control a defogging system of the vehicle in response to a detection of the presence of fog particles at the interior of the window. However, Stam further discloses a controller that detects both rain and fog and is operable to control a defogging system (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the controller control a defogging system to increase the functionality of the system and to increase the visibility of the user.

In regard to claims 119, 120 and 141, Bechtel in view of Noack and Stam discloses in Noack discloses that the control is operable to adjust the rate of the wipe in response to a quantity of water droplets sensed at the exterior of the window (column 7, line 42 – column 8, line 16).

In regard to claim 126, Bechtel in view of Noack and Stam discloses in Noack (fig. 1), an illumination device (26) for illuminating at least a portion of the field of view of the imaging sensor; wherein the illumination device is at least occasionally activated (abstract).

In regard to claims 142-144, Bechtel in view of Noack and Stam discloses that the first and second imaging arrays are positioned at the interior rearview mirror assembly and at least one is positioned within the rearview mirror assembly (Bechtel, (column 8, lines 54-60; Noack, column 4, lines 30-40).

In regard to claims 145 and 146, Bechtel in view of Noack and Stam are not explicit regarding both sensors being placed within the rearview mirror. However, making parts integral

Art Unit: 2878

does not make the limitation patentably distinct. *See In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 249 (CCPA 1965). It would have been obvious to one of ordinary skill in the art at the time the invention was made to place both sensors in the rearview mirror and decoupled from the windshield in order to reduce the size of the apparatus.

In regard to claim 133, Bechtel in view of Noack and Stam discloses in Stam that at least one of the rain sensor control and the headlamp control is operable to apply the digital filtering process to the image data to reduce the effects of scratches on the window of the vehicle in the field of view of the imaging sensor (column 8, line 44 – column 9, line 39).

In regard to claim 134, Bechtel in view of Noack and Stam discloses that the imaging sensor includes first and second imaging arrays, the control being operable to control at least one of a windshield wiper of the vehicle and a defogging system of the vehicle in response to an output from the first imaging array (Noack, fig. 1, 43), and the control being operable to control a headlamp of the vehicle in response to an output signal from the second imaging array (Bechtel, fig. 1, DS) and each imaging sensor includes a two-dimensional pixilated array of light sensing photosensor elements, the array of sensing elements being formed on a semiconductor substrate (Stam, column 9, lines 55-63).

In regard to claim 147, Bechtel in view of Noack and Stam discloses that the imaging sensor includes first and second imaging arrays, first imaging array (Noack, fig. 1, 43) being a CMOS imaging array positioned in the interior of the vehicle and with a field of view through the windshield to the exterior of the vehicle and the second imaging array (Bechtel, fig. 1, DS) being a CMOS imaging array positioned in the interior of the vehicle and with a field of view through the windshield to the exterior of the vehicle (Stam, column 9, lines 55-63).

In regard to claim 148, the specific scheme utilized in digital filtering process would involve only routine skill in the art and would have been obvious to one of ordinary skill in the art in view of meeting different design requirements and achieving the particular desired performance.

Claim 106 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027) as applied to claims 105, and in further view of Bendicks et al. (5498866).

In regard to claim 106, Bechtel in view of Noack and Stam discloses a system with a rain sensor. Bechtel in view of Noack and Stam fails to disclose the imaging sensor for operation with the rain sensor having a field of view through a rear window of the vehicle. However, Bendicks teaches that it is common to image the rear window to detect rain (column 1, lines 14-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to image a field of view through a rear window in order to control a windshield wiper on the back window.

Claims 121-124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027) as applied to claim 119, and in further view of Shiraishi (4881019).

In regard to claims 121-124, Bechtel in view of Noack and Stam discloses a system with which controls a front windshield wiper. Bechtel in view of Noack and Stam fails to disclose also controlling a back windshield wiper as a function of the front windshield wiper. However,

Art Unit: 2878

Shiraishi discloses (fig. 1) a control operable to control a back windshield wiper in response to detection of water droplets at the exterior surface of the windshield and controlling the back windshield wiper to cycle for every N cycles of front windshield wiper wherein the value of N varies as a function of the speed of the windshield wiper (column 12, lines 59-68). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a back windshield wiper control in order to effectively maintain a clear back windshield using the most efficient speed.

Claim 130 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027) as applied to claim 127, and in further view of Kobayashi et al. (5426294).

In regard to claim 130, Bechtel in view of Noack and Stam discloses a system with an imaging sensor. Bechtel in view of Noack and Stam fails to disclose the imaging sensor being a CCD sensor. However, Kobayashi discloses (fig. 14) a rearview mirror system with a CCD sensor (column 2, lines 37-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a CCD sensor in order to inexpensively image the windshield.

Claim 131 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027) as applied to claim 103, and in further view of Kiyomoto et al. (5844682).

In regard to claim 131, Bechtel in view of Noack and Stam discloses a system with an imaging sensor. Bechtel in view of Noack and Stam fails to disclose the imaging sensor having a polarizing filter. However, Kiyomoto discloses placing a polarizing filter in front of a receiving element in a rain detection apparatus (column 28, lines 25-38). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a polarizing filter in front of the receiving element in order to more accurately detect the reflected light and effectively eliminate errors due to the surface of the windshield.

Claim 132 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bechtel et al. (5451822) in view of Noack (4355271) and in further view of Stam et al. (5923027) as applied to claim 103, and in further view of Levers (5276389).

In regard to claim 132, Bechtel in view of Noack and Stam discloses a system with an imaging sensor. Bechtel in view of Noack and Stam fails to disclose that the rain sensor control is operable to apply an edge detection algorithm to the output signal to detect edges of rain droplets on a surface of a window. However, Lever discloses (fig. 5) a rain sensor with an edge detection algorithm used for detecting edges of rain droplets (column 10, lines 12-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a edge detection algorithm in order to more accurately detect the amount of rain on the windshield.

Response to Arguments

Applicant's arguments filed on 7/9/2008 have been fully considered but they are not persuasive.

Applicant argues that neither Bechtle'822, Noack nor Stam et al disclose or suggest an image sensor that applies a digital filtering process to account for irregularities on the window of the vehicle, wherein the digital filtering process smoothes the image data by adjusting values associated with individual pixels based on values associated with respective neighboring pixels at or adjacent or near the individual pixels. However, the examiner disagrees with this argument. Contrary to applicant's argument, as stated above in the rejection, Stam et al discloses in col.8, line 44-col.9, line 39 such a digital filtering process. Further, Stam et al discloses in col.9, lines 36-39 that irregularities of window (i.e. the image of dirty windshield, cracks, scratches, etc.) are compensated from the detected image of rain.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Honda et al (6,763,129) is cited for disclosing an image processing apparatus utilizing a digital filtering process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Pyo whose telephone number is (571) 272-2445. The examiner can normally be reached on Mon-Fri (with flexible hour), First Mon. off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Pyo/
Primary Examiner, Art Unit 2878